ABSTRACT

Charles University in Prague
Faculty of Pharmacy in Hradec Králové
Department of Biochemical Sciences

Title, Name, Surname of candidate: Bc. Veronika Hanušová
Title, Name, Surname of tutor: Doc. RNDr. Lenka Skálová, Ph.D.
Title of a diploma work: **Doxorubicin cytotoxicity and metabolism in MCF-7 cell line.**

Doxorubicin (DOX) is ranked among anthracycline chemoterapeutics, significantly participant in the treatment of solid tumors, inclusive breast carcinoma and haematologic malignancies. DOX is metabolized to 13-OH-doxorubicinol (DOX-OL) produced by carbonyl reductase 1 (CBR1). DOX-OL is lower antineoplastic, but more cardiotoxic compared to the parent drug. Aim of this work was research of reduction DOX and testing possible increasing cytotoxicity of DOX through inhibition his reductase. For experiments has been selected human breast cancer cell line MCF-7. Initially has been elicit optimal composition of cultural medium and optimalized process on sample preparation for HPLC. In the study of DOX metabolism in cytosol the MCF-7 cells act oracin (potentional chemoterapeutic) as significantly kompetition's inhibitor of DOX reductases. In cytotoxicity tests acted DOX more toxic in cells with bovine serum in medium, oracin was again more toxic in cells without bovine serum. Combination DOX with oracin acted more toxic than single DOX to tumor cells MCF-7.